Econ 1101
Summer 2013
Lecture 7

Section 005
6/26/2013

Announcements

- Homework 6 is due tonight at 11:45pm, CDT
- Midterm tomorrow!
  - Will start at 5:40pm, there is a recitation beforehand.
  - Make sure to work through the practice problems posted on the website.
  - Ask me questions during my office hours tomorrow
    - Any time between 2.30pm and 4.30pm.

Agenda for today

- Introduce Consumer Theory:
  - Budget Constraint
- Introduce preferences:
  - Perfect Substitutes
  - Perfect Complements
  - Decreasing marginal rate of substitution

Consumer Theory

- So far, we have only assumed that demand is given and predetermined
- However, we can go one step back and figure out how demand was found in the first place
- What do we need to figure out demand? For example, when you go to the grocery store, what determines your demand for steak?

Budget Constraint

Suppose:

- Goldy has income: I = $24
- Price of pizza: P_{pizza} = $4 slice
- Price of beer: P_{beer} = $2 bottle

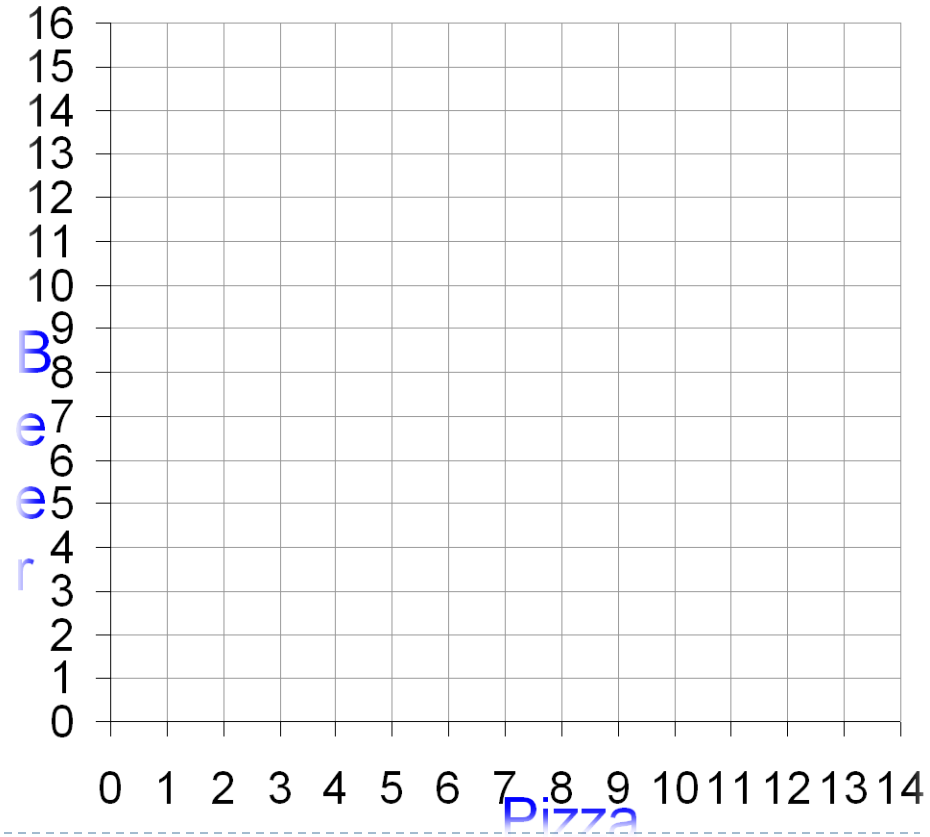
- Make a table of what Goldy can afford.

Horizontal intercept = I/P_{pizza} = \$24/\$4 = 6 pizza

Vertical intercept = I/P_{beer} = \$24/\$2 = 12 beer

Slope = P_{pizza}/P_{beer}

= 4/2 = 2



Key thing to know:

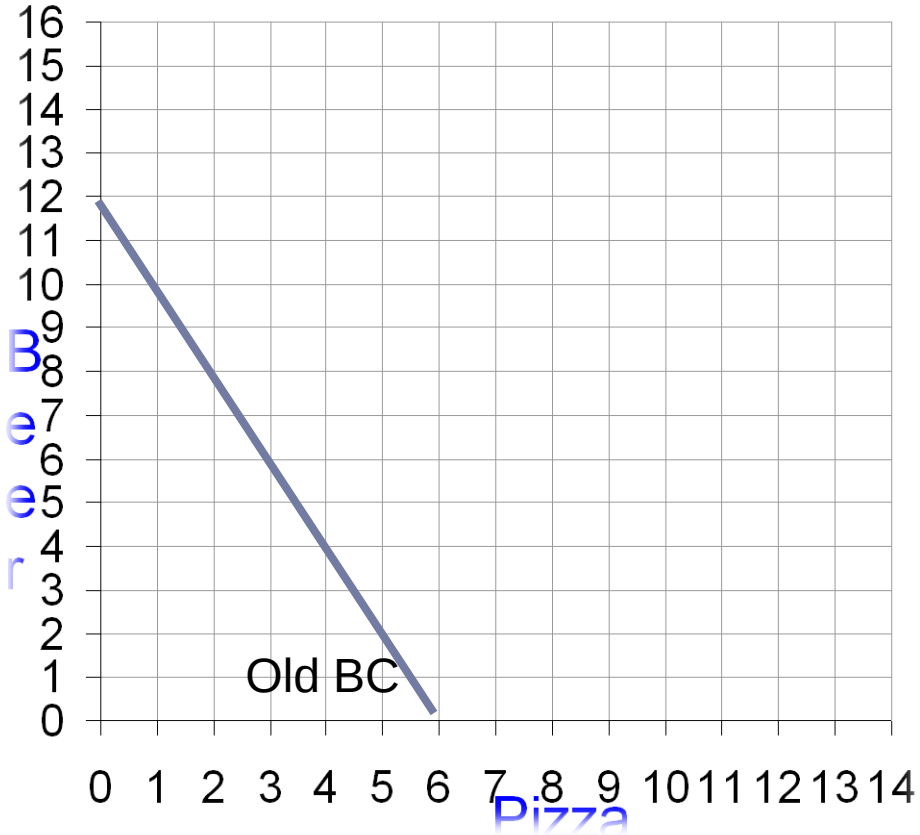
Slope of budget constraint is

Opportunity Cost of 1 more pizza (in terms of beer)
(Since pizza is on the X axis)

- 1 more slice of pizza costs 2 bottles of beer.

What happens when price of pizza falls to P_{pizza} = $2?

- New budget constraint.
- Opportunity cost of one pizza slice?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Old BC
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Budget Constraint

Budget constraint tells us what the consumer can do.

What does the consumer want to do?

Depends on the preferences of the consumer.

Consumer will get different utility from different combinations of pizza and beer.

Will make the choice that maximizes utility. We will call this choice the optimal consumption bundle.

Preferences

Budget constraint tells us what the consumer can do.

What does the consumer want to do?

Depends on the preferences of the consumer.

Consumer will get different utility (happiness) from different combinations of pizza and beer.

Will make the choice that maximizes utility. We will call this choice the optimal consumption bundle.

We will look at 3 different types of preferences

To introduce preferences, let's look at three nice dudes!

Assume the ducks consume only pizza and beer.

- All the ducks have the same income and face the same prices (same budget constraints, as we just looked at).
  - Income = $24
  - Price of pizza = $4
  - Price of beer = $2
- But differ in preferences.

We will explain their preferences and then look at their choices.

Case 1: **Huey**

(Perfect Substitutes)

Huey gets utility from calories (the more the better).

Suppose pizza has 200 calories and beer has 200 calories

Utility = $200*Q_{pizza} + 200*Q_{beer}$

What bundle maximizes utility? What is the total utility?

- Remember $P_{beer} = 2$, $P_{pizza} = 4$.

One thing we could do, if it is not as obvious as this example was, is to calculate utility per dollar spent on each good:

Pizza:

Beer:

Beer is the best value (at these prices) in terms of utility per dollar spent.

Huey will spend all his money on beer.

Q_{beer} =

Q_{pizza} =

Let’s see how we can represent this on our diagram:

- Gives us another way to figure out the optimal consumption bundle.

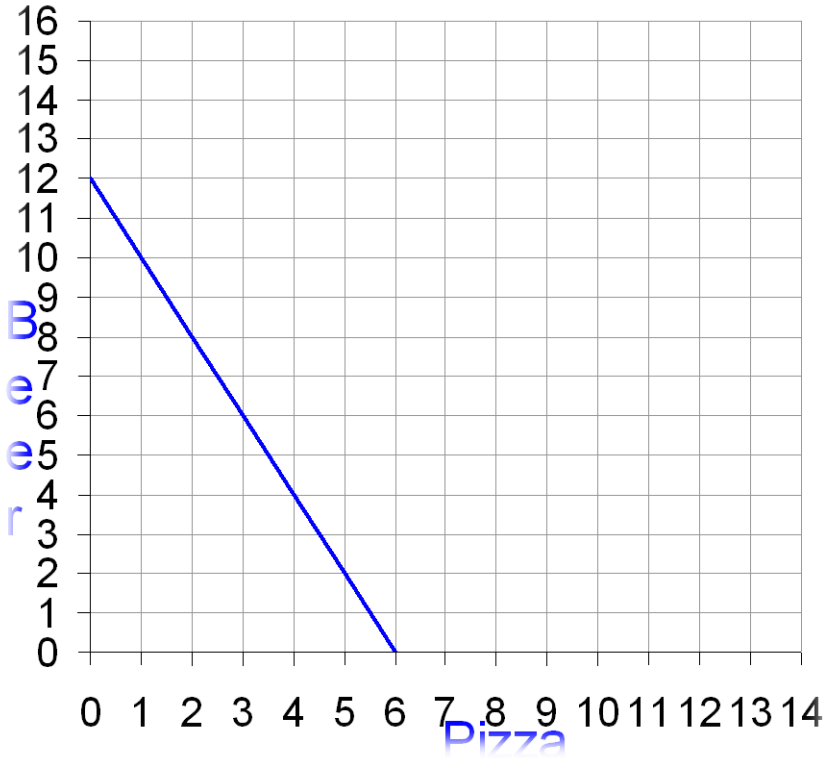
Introduce concept of Indifference curves:

- Combinations of beer and pizza that give the same utility (the consumer is indifferent.

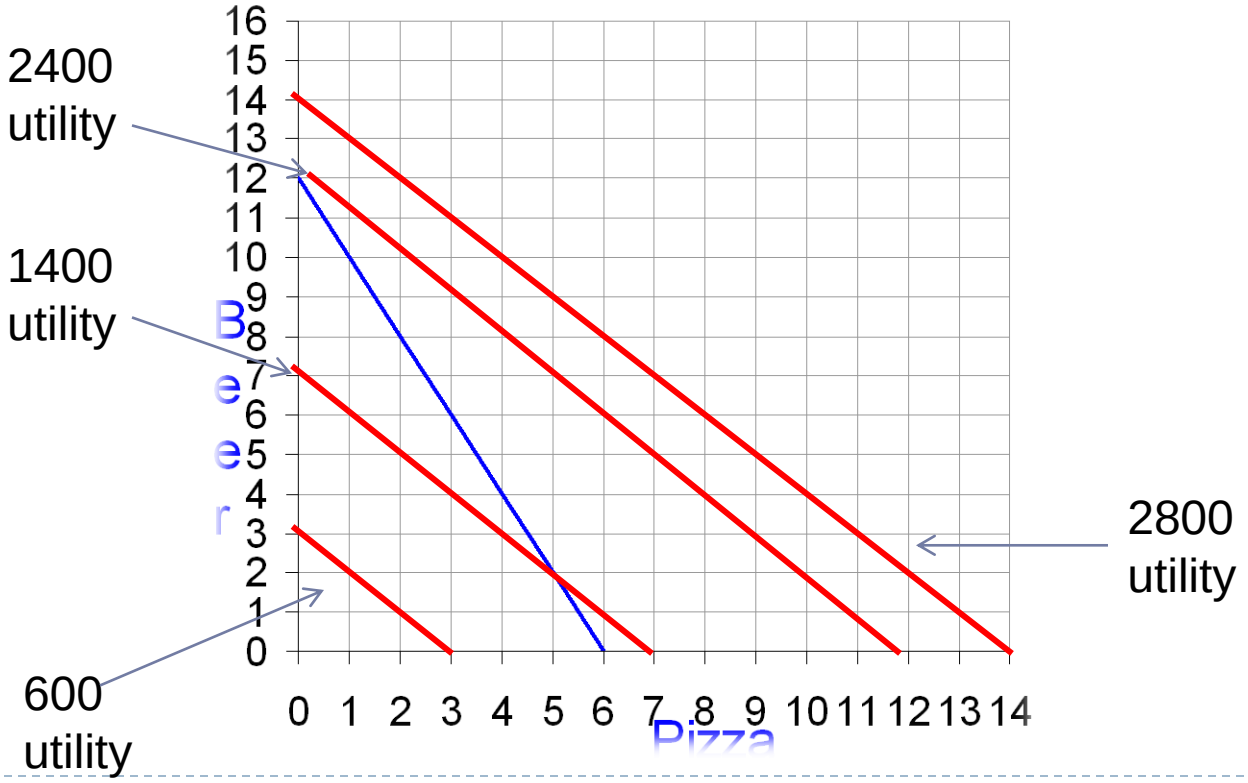
Indifference curve (IC) through $Q_{beer} = 12$ and $Q_{pizza} = 0$

Utility = $200*Q_{pizza} + 200*Q_{beer}$

- Get 200 each way, so trade off one-for-one.



- Of course, Huey also has preferences for any other combination of beer and pizza. They can be shown on other indifference curves (we usually just draw a few, but just because they are not drawn does not mean they are not there). Note that utility was calculated from the utility function for Huey.



Rule: pick the bundle on the budget constraint that gets to the highest indifference curve

The slope of indifference curve is the Marginal Rate of Substitution (MRS)

In the first example, it's one for one. (value of one more pizza slice in terms of beer)

Look again at

$Q_{beer} = 12$ and $Q_{pizza} = 0$ on the budget constraint.

At this point:

Value of one more unit of pizza is one beer (MRS)

Cost of one more unit of pizza is two beers (Opportunity Cost)

Case 2: **Dewey**

Fixed Proportions (Perfect Complements)

Dewey is very particular:

A meal: one beer and one pizza (he is equally as happy with two beers and one pizza as he is with one beer and one pizza because it's still only one meal with two beers and one pizza)

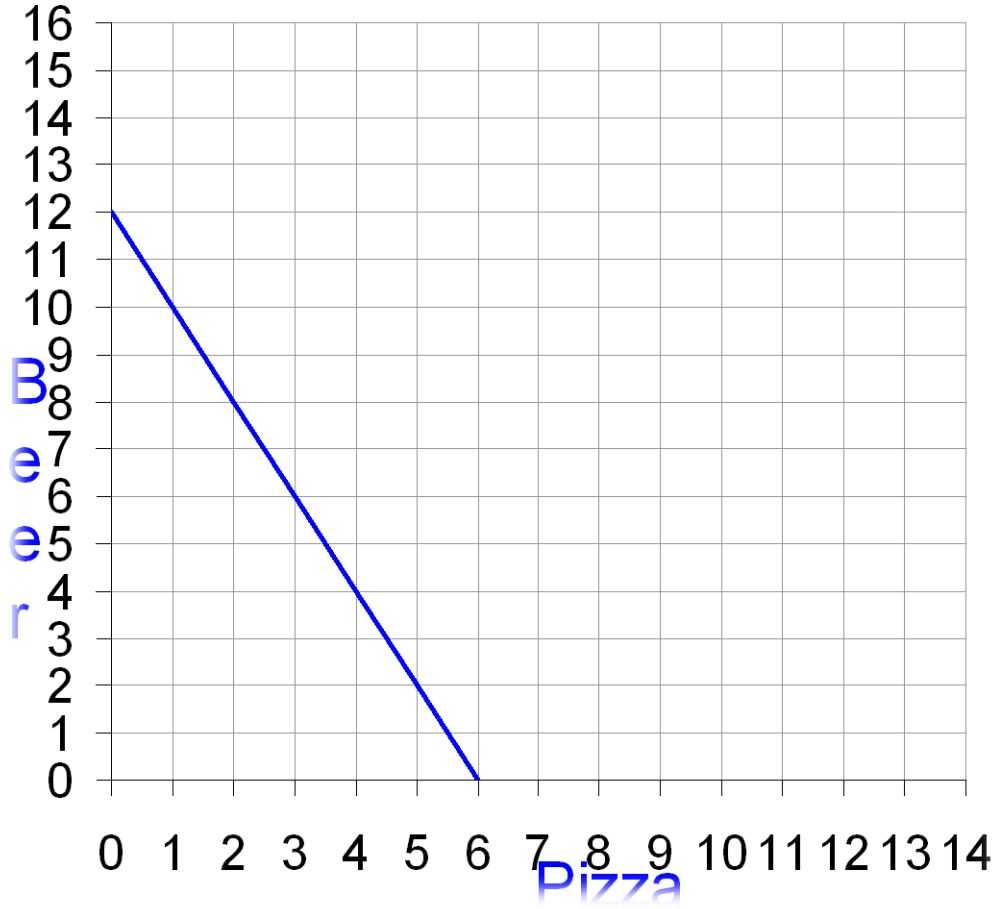
Utility equals number of meals.

Suppose Dewey has I = 24 just like before and P_{pizza} = \$4 and P_{beer} =\$2

What is optimal consumption bundle?

How much for a meal?

- Picture: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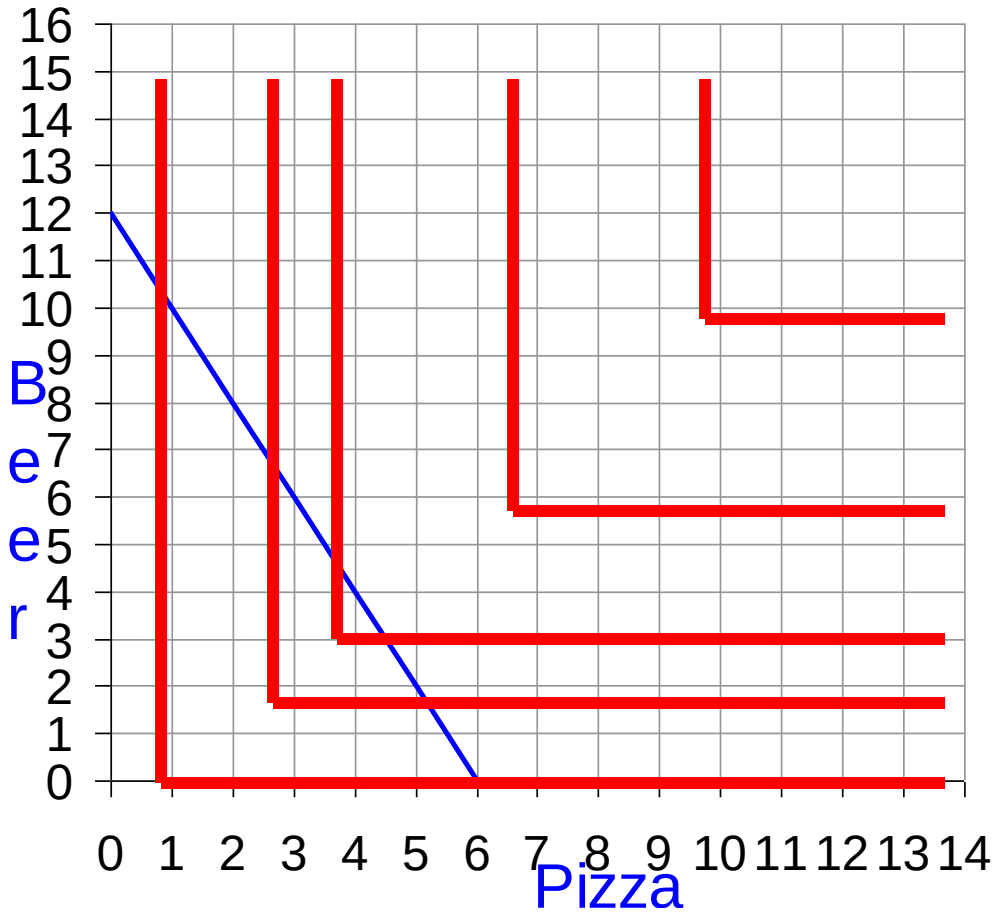
Beer
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Pizza

Remember, the higher the indifference curve, the better. These right angle ICs make sense for perfect complements (fixed proportions) because Dewey is equally happy having 4 beer and 4 pizza and 5 beer and 4 pizza, or 6 beer and 4 pizza,…, or 100000 beer and 4 pizza, since he only gets 4 meals out of it. That's why the points (4,4), (4,5), (4,6),…, (4,10000),… are all on the same indifference curve.



Case 3: **Louie**

In between these extreme cases (our “normal” case)

(Diminishing marginal rate of substitution)

Meaning, as he eat more pizza, his willingness to give up beer to get even more pizza goes down.

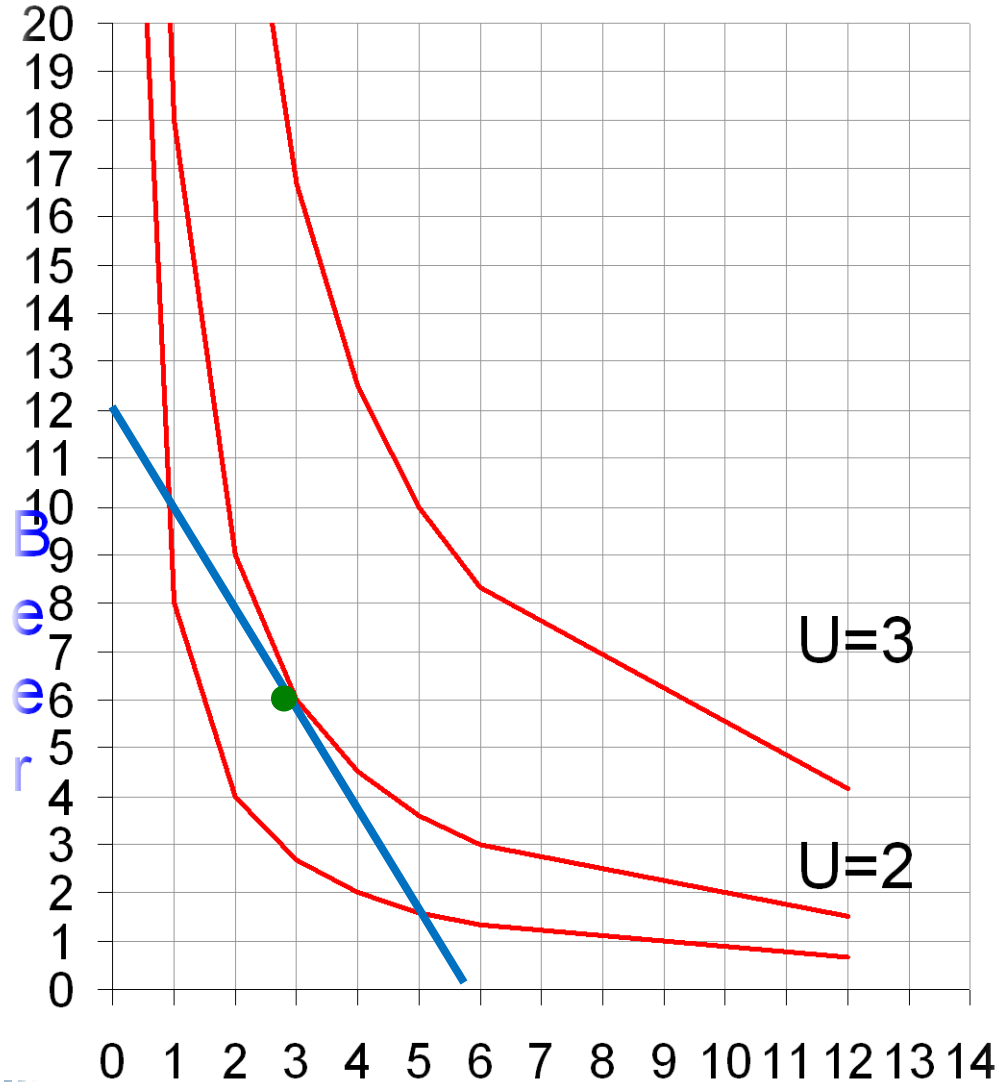
Means indifference curves have a bowed shaped.

How do we find the slope of the a curve? Put differently, how do we find the marginal rate of substitution of these “bowed” indifference curves?

Suppose
P_{Beer} = \$2, P_{Pizza} = \$4, I = \$24

The green point is where we have the highest indifference curve that has a consumption bundle we can afford

The green point is our Optimal Consumption Bundle



For decreasing marginal rate of substitution, the optimal consumption bundle satisfies two conditions:

(1) On budget constraint and

(2)

$$MRS = \frac{P_{pizza}}{P_{beer}}$$ (which is just slope of the BC)

Marginal benefit of pizza (in beer) = Marginal cost of pizza (in beer)